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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,587	04/01/2004	Isao Sawamoto	4900.P0044US	9472
23474 7590 06/08/2007 FLYNN THIEL BOUTELL & TANIS, P.C. 2026 RAMBLING ROAD KALAMAZOO, MI 49008-1631			EXAMINER WILKINS III, HARRY D	
			ART UNIT 1742	PAPER NUMBER
			MAIL DATE 06/08/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/815,587

**Applicant(s)**

SAWAMOTO ET AL.

**Examiner**

Harry D. Wilkins, III

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) 1-4 and 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-7 is/are rejected.
- 7) ☒ Claim(s) 5 and 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/1/04</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election with traverse of group II, claims 5-7 in the reply filed on 2 April 2007 is acknowledged. The traversal is on the ground(s) that a search for the apparatus would necessarily entail a search for the non-elected invention. This is not found persuasive because the elected apparatus claims are limited only by the structure set forth therein, not by how the structure is utilized by the non-elected method claims. As set forth previously, the apparatus as claimed could be used to practice a materially different process, such as production of only oxygen at the anode.

The requirement is still deemed proper and is therefore made FINAL.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 5-7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claims recite "said ion exchange film is electrolyzed as a solid electrolyte, to produce ozone gas and oxygen gas from the anode side, and hydrogen gas from the cathode side". Accepted mechanisms for production of ozone, oxygen and hydrogen include use of a solid ion exchange membrane (film), but water is what is actually

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electrolyzed (reacted) to produce the ozone, oxygen and hydrogen. Applicant has failed to provide any sort of discussion of what material the ion exchange film was made from, so it can only be assumed that a conventional membrane film was utilized. Therefore, Applicant's claims are not properly supported by the underlying facts of how electrolytic cells operate.

### ***Claim Objections***

4. Claims 5 and 6 are objected to because of the following informalities: these claims recite "porous anodic substance and cathodic substance" in line 2 of each claim. It is unclear if "porous" is meant to refer to only the anodic substance or to both the anodic and cathodic substances, particularly in view of Applicant's figures which describes both of the anodic and cathodic substances as porous. Appropriate correction is required.

### ***Claim Interpretation***

5. It is noted that claims 5 and 6 recite "said device has a structure such that carbon dioxide is brought into contact with pure water supplied to the anode side, so that the pure water becomes carbonated water". This language is interpreted to mean that the claimed electrolytic gas generation device is constructed such that at some point in the device the anolyte is exposed to carbon dioxide. Air is considered a gas which contains carbon dioxide. Thus, a device that did not hold the anolyte water in a protected atmosphere or a vacuum meets this claim feature.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 5-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Shimamura et al (US 5,407,550).

Shimamura et al anticipate the invention as claimed. Shimamura et al teach (see abstract, col. 1, line 20 to col. 2, line 2 and col. 2, lines 17-31) an electrolytic gas generation device including a porous anode (ozone electrode), a cathode, each arranged in close proximity to an ion exchange membrane, wherein water is fed to the anode chamber. Ozone and oxygen are produced at the anode, and hydrogen at the cathode. Shimamura et al teach that in practice of using such electrolyzers, carbonic acid can be present within the electrolyte. Carbonic acid is carbon dioxide dissolved in water.

Thus, the structure described by Shimamura et al inherently had "a structure such that carbon dioxide is brought into contact with pure water supplied to the anode side, so that the pure water becomes carbonated water" because carbonic acid formed within the electrolyte.

8. Claims 5-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamanaka et al (US 5,720,869).

Yamanaka et al anticipate the invention as claimed. Yamanaka et al teach (see abstract, figure 1, col. 9, line 39 to col. 12, line 5) an electrolytic gas generation device including an anode, cathode and ion exchange membrane, wherein water is fed to the anode and cathode chambers. Ozone and oxygen are produced at the anode, and hydrogen at the cathode. Yamanaka et al teach that additions of electrolyte are made to the high purity water being fed to the anode chamber, and include carbonic acid as a suitable electrolyte. Carbonic acid is carbon dioxide dissolved in water, thus the device of Yamanaka et al inherently included a structure which exposed the anolyte to carbon dioxide gas to permit carbonation of the anolyte.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamanaka et al (US 5,720,869) in view of Uchida et al (US 6,164,632).

Yamanaka et al fail to teach how the carbonic acid is formed within the anolyte solution. However, since carbonic acid is generally accepted in the chemical arts to mean carbon dioxide dissolved in water, i.e.-carbonated water, it would have been obvious to one of ordinary skill in the art to have added conventional structure for exposing the water to carbon dioxide to permit the carbon dioxide to dissolve so as to form the carbonic acid solution disclosed by Yamanaka et al.

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the carbonation device of Uchida et al (see figures 1 and 3), which included a membrane film on one side of which carbon dioxide gas was fed and on the other side of which water was fed so as to dissolve the carbon dioxide in the water, because Uchida et al teach that the membrane carbon dioxide dissolver operated with high efficiency (see col. 3, lines 13-15).

### ***Conclusion***

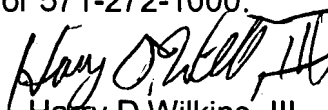
11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The "Carbonated Water" and "Carbonic Acid" articles from [www.wikipedia.org](http://www.wikipedia.org) (accessed on 6 June 2007) are cited to provide a showing that one of ordinary skill in the art was aware that the term carbonic acid referred to a solution of carbon dioxide dissolved in water.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Harry D Wilkins, III  
Primary Examiner  
Art Unit 1742

hdw